

## Abstract

The present invention is directed to a sensor for detecting changes in the distance between a first and a second location, having at least one substantially helically coiled optical fiber, which is able to be mechanically connected to at least one of the locations, and having a light transmitter and a detecting device for optical signals, the detecting device being able to generate an output signal, which is dependent upon the polarization state of the optical signal transmitted via the optical fiber. The present invention is also directed to a method for detecting the changes in distance between a first and a second location, having the following features: at least one of the locations is mechanically coupled to a substantially helically coiled optical fiber; an optical signal having a known polarization state is launched into the optical fiber; following transmission over the connecting line, this is detected in such a way that information is obtained with respect to its polarization state; from this information, the change in distance is determined.